



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,707	04/21/2004	Boon Keat Tan	70040215-1	5375

57299 7590 08/09/2007  
Kathy Manke  
Avago Technologies Limited  
4380 Ziegler Road  
Fort Collins, CO 80525

EXAMINER
----------

WHIPKEY, JASON T

ART UNIT	PAPER NUMBER
----------	--------------

2622

MAIL DATE	DELIVERY MODE
-----------	---------------

08/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/828,707

Applicant(s)

TAN ET AL.

Examiner

Jason T. Whipkey

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Huebner (U.S. Patent No. 3,960,452):

Regarding **claim 1**, the preamble has no patentable weight. Huebner discloses:

a plurality of color sensor circuits (see Figure 4), each color sensor circuit in the plurality of color sensor circuits including:

a light detector (x photodetector 28, y photodetector 28', and z photodetector 28''),

an amplifier (52, 52', and 52'') connected to the light detector, the amplifier amplifying a signal from the light detector, and

a gain selection circuit (including resistors 31, 31', and 31''), connected to the amplifier, the gain selection controlling gain of the amplifier, the gain selection circuit including a variable feedback resistance (see column 5, lines 35-37); and,

a gain selection control that selects a separate value of the variable feedback resistance for each color sensor circuit (see *id.* and Figure 4).

Regarding **claim 2**, Huebner discloses:

the plurality of color sensor circuits include a red color sensor circuit, a green color sensor circuit and a blue color sensor circuit (x, y, and z photodetectors represent red, green, and blue, respectively; see column 1, lines 38-41).

Regarding **claim 5**, Huebner discloses:

the gain selection control selects the separate value of the variable feedback resistance for each color sensor circuit so that for each color sensor circuit any selected range from a selected minimum illuminance to a selected maximum illuminance is guaranteed to utilize at least a predetermined percentage of a full voltage range provided the selected maximum is within a predefined range (the ratio of resistances is adjusted so that the sum of the x, y, and z signals equals one; see column 6, lines 11-48).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2622

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huebner in view of Shi (U.S. Patent Application Publication No. 2005/0219379).

**Claim 3** can be treated like claim 1. While Huebner discloses that red, green, and blue color sensors are included (x, y, and z photodetectors represent red, green, and blue, respectively; see column 1, lines 38-41), he is silent with regard to including a white color sensor.

Shi discloses a color imaging system, wherein white pixels are included with red, green, and blue pixels (see Figure 4). As stated in paragraph 19, an advantage of including white pixels is that they can be used to determine whether a gain adjustment to the red, green, and blue pixels is necessary. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Huebner's system include white pixels.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huebner.

**Claim 4** can be treated like claim 1. However, Huebner is silent with regard to the variable resistance being comprised of a plurality of resistors in series and a plurality of switches connected to the resistors.

Official Notice is taken that it was well known in the art at the time the invention was made to select a variable resistance using a plurality of resistors in series connected to a plurality of switches. The substitution of a plurality of resistors in series connected to a plurality of switches for a variable resistor would have yielded predictable results, so it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform such a substitution.

7. Claims 6, 7, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huebner in view of Tsukahara (Japanese Patent Publication No. 62-269507).

**Claim 6** can be treated like claim 1. However, Huebner is silent with regard to including a multi-stage amplifier.

Tsukahara discloses a multi-stage amplifier, as shown in Drawing 1. As stated in the abstract, an advantage of using a multi-stage amplifier is that a signal can be amplified with relatively low power consumption. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Huebner's system include a multi-stage amplifier, as described by Tsukahara.

**Claim 7** can be treated like claim 1. However, Huebner is silent with regard to including a multi-stage amplifier with separate gain selection at multiple stages.

Tsukahara discloses a multi-stage amplifier with a gain selection at each stage, as shown in Drawing 1. As stated in the abstract, an advantage of using a multi-stage amplifier is that a signal can be amplified with relatively low power consumption. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have

Art Unit: 2622

Huebner's system include a multi-stage amplifier with separate gain selection at multiple stages, as described by Tsukahara.

**Claim 16** can be treated like claims 1 and 7.

**Claims 17 and 18** can be treated like claim 16. However, Huebner is silent with regard to the variable resistance being comprised of a plurality of resistors in series and a plurality of switches connected to the resistors.

Official Notice is taken that it was well known in the art at the time the invention was made to select a variable resistance using a plurality of resistors in series connected to a plurality of switches. The substitution of a plurality of resistors in series connected to a plurality of switches for a variable resistor would have yielded predictable results, so it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform such a substitution.

8. Claims 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huebner in view of Pomata (U.S. Patent Application Publication No. 2002/0175752).

**Claim 8** can be treated like claim 1. However, Huebner is silent with regard to including a variable compensation capacitance.

Pomata discloses a variable gain amplifier for an imaging apparatus (see Figure 2), wherein:

the gain selection circuit additionally includes a variable compensation capacitance (variable capacitive element 4); and,

wherein the gain selection control selects a value of the variable compensation capacitance (see paragraph 62).

As stated in paragraph 63, an advantage of including a variable compensation capacitance is that the gain and cutoff frequency can be changed within a wide range. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Huebner's system include a variable compensation capacitance, as described by Pomata.

Regarding **claim 9**, the preamble has no patentable weight. Huebner discloses:

a light detector (x photodetector 28);

an amplifier (52) connected to the light detector, the amplifier amplifying a signal from the light detector;

a gain selection circuit (including resistor 31), connected to the amplifier, the gain selection controlling gain of the amplifier, the gain selection circuit including:

a variable feedback resistance (see column 5, lines 35-37),

a gain selection control that selects a value of the variable feedback resistance (see *id.* and Figure 4).

Huebner is silent with regard to including a variable compensation capacitance.

Pomata discloses a variable gain amplifier for an imaging apparatus (see Figure 2), wherein:

the gain selection circuit additionally includes a variable compensation capacitance (variable capacitive element 4); and,

wherein the gain selection control selects a value of the variable compensation capacitance (see paragraph 62).

As stated in paragraph 63, an advantage of including a variable compensation capacitance is that the gain and cutoff frequency can be changed within a wide range. For this reason, it



Art Unit: 2622

would have been obvious to one of ordinary skill in the art at the time the invention was made to have Huebner's system include a variable compensation capacitance, as described by Pomata.

Regarding **claim 10**, Huebner discloses:

a second light detector (y photodetector 28');

a second amplifier (52') connected to the second light detector, the second amplifier amplifying a signal from the second light detector; and,

a second gain selection circuit (including resistor 31'), connected to the second amplifier, the second gain selection controlling gain of the second amplifier, the second gain selection circuit including:

a second variable feedback resistance (see column 5, lines 35-37),

and

wherein the gain selection control selects a value of the second variable feedback resistance (see *id.* and Figure 4).

Huebner is silent with regard to including a variable compensation capacitance.

Pomata discloses a variable gain amplifier for an imaging apparatus (see Figure 2), wherein:

the gain selection circuit additionally includes a variable compensation capacitance (variable capacitive element 4); and,

wherein the gain selection control selects a value of the variable compensation capacitance (see paragraph 62).

As stated in paragraph 63, an advantage of including a variable compensation capacitance is that the gain and cutoff frequency can be changed within a wide range. For this reason, it

Art Unit: 2622

would have been obvious to one of ordinary skill in the art at the time the invention was made to have Huebner's system include a variable compensation capacitance, as described by Pomata.

Regarding **claim 11**, Huebner discloses:

a third light detector (z photodetector 28");

a third amplifier (52") connected to the third light detector, the third amplifier amplifying a signal from the third light detector; and,

a third gain selection circuit (including resistor 31"), connected to the third amplifier, the third gain selection controlling gain of the third amplifier, the third gain selection circuit including:

a third variable feedback resistance (see column 5, lines 35-37),

and

wherein the gain selection control selects a value of the third variable feedback resistance (see *id.* and Figure 4).

Huebner is silent with regard to including a variable compensation capacitance.

Pomata discloses a variable gain amplifier for an imaging apparatus (see Figure 2), wherein:

the gain selection circuit additionally includes a variable compensation capacitance (variable capacitive element 4); and,

wherein the gain selection control selects a value of the variable compensation capacitance (see paragraph 62).

As stated in paragraph 63, an advantage of including a variable compensation capacitance is that the gain and cutoff frequency can be changed within a wide range. For this reason, it

Art Unit: 2622

would have been obvious to one of ordinary skill in the art at the time the invention was made to have Huebner's system include a variable compensation capacitance, as described by Pomata.

Regarding **claim 12**, Huebner discloses:

the light detector includes a red filter, the second light detector includes a green filter and the third light detector includes a blue filter (x, y, and z photodetectors represent red, green, and blue, respectively; see column 1, lines 38-41).

**Claim 13** can be treated like claim 1. However, Huebner is silent with regard to the variable resistance being comprised of a plurality of resistors in series.

Official Notice is taken that it was well known in the art at the time the invention was made to select a variable resistance using a plurality of resistors in series. The substitution of a plurality of resistors in series for a variable resistor would have yielded predictable results, so it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform such a substitution.

**Claim 14** can be treated like claim 1. However, Huebner is silent with regard to the variable resistance being comprised of a plurality of resistors in series and a plurality of switches connected to the resistors.

Official Notice is taken that it was well known in the art at the time the invention was made to select a variable resistance using a plurality of resistors in series connected to a plurality of switches. The substitution of a plurality of resistors in series connected to a plurality of switches for a variable resistor would have yielded predictable results, so it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform such a substitution.

**Claim 15** can be treated like claim 14. However, Huebner is silent with regard to the variable capacitance being comprised of a plurality of capacitors in series and a plurality of switches connected to the capacitors.

Official Notice is taken that it was well known in the art at the time the invention was made to select a variable capacitance using a plurality of capacitors in series connected to a plurality of switches. The substitution of a plurality of capacitors in series connected to a plurality of switches for a variable capacitor would have yielded predictable results, so it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform such a substitution.

9. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huebner in view of Tsukahara and further in view of Pomata.

**Claim 19** can be treated like claim 16. However, Huebner is silent with regard to including a variable compensation capacitance.

Pomata discloses a variable gain amplifier for an imaging apparatus (see Figure 2), wherein:

each of the plurality of gain selection circuits includes a variable compensation capacitance (variable capacitive element 4); and,  
wherein the gain selection control selects a separate value for the variable compensation capacitance within each of the plurality of gain selection circuits (see paragraph 62).

As stated in paragraph 63, an advantage of including a variable compensation capacitance is that the gain and cutoff frequency can be changed within a wide range. For this reason, it

Art Unit: 2622

would have been obvious to one of ordinary skill in the art at the time the invention was made to have Huebner's system include a variable compensation capacitance, as described by Pomata.

**Claim 20** can be treated like claim 19. However, Huebner is silent with regard to the variable capacitance being comprised of a plurality of capacitors in series and a plurality of switches connected to the capacitors.

Official Notice is taken that it was well known in the art at the time the invention was made to select a variable capacitance using a plurality of capacitors in series connected to a plurality of switches. The substitution of a plurality of capacitors in series connected to a plurality of switches for a variable capacitor would have yielded predictable results, so it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform such a substitution

### *Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Whipkey, whose telephone number is (571) 272-7321. The examiner can normally be reached Monday through Friday from 9:00 A.M. to 5:30 P.M. eastern daylight time.

Art Unit: 2622

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye, can be reached at (571) 272-7372. The fax phone number for the organization where this application is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JTW

JTW

August 6, 2007



LIN YE  
SPE. ART UNIT 2622